

2016-2017 CURRICULUM OUTLINE

GENERAL CHEMISTRY

- Chemical Nomenclature
- Writing Chemical Formulas
- Stoichiometry
 - Mole Conversions
 - Percent Yield
- The symbols and charges for the following ions:
 - Nitrate
 - Carbonate
 - Phosphate
 - Acetate
 - Sulfate
 - Ammonium
 - Bicarbonate
 - Hydroxide
- Use the “-ite” form of an anion (one less oxygen than the “-ate” form)
- Use the periodic table to determine the charge of monatomic ions

GASES

- Physical properties of gases
- Effect of greenhouse gases and ozone depletion on our climate
- Behavior of gases described by the following laws:
 - Avogadro’s Law
 - Boyle’s Law
 - Charles’ Law
 - Dalton’s Law
 - Gay-Lussac’s Law
 - Graham’s Law
 - The Ideal Gas Law
- Determining the following:
 - Density of gas
 - Particle-pressure of a gas
 - Molar mass of a gas
 - Relative rates of gases
- Examine the relationships between:
 - Pressure and Volume
 - Pressure and Temperature
 - Temperature and Volume

THERMODYNAMICS

- Know the following concepts:
 - Direction of heat flow
 - Endothermic and Exothermic Processes
 - Units of heat measurement (joules, calories, etc.)

- Heat capacity
- Calorimeter
- Enthalpy change
- Thermochemical equations
- Heat of fusion & Solidification
- Heat of vaporization & condensation
- Phase diagrams
- Heat of solution
- Heat of combustion
- Heats of reaction
- Standard heat of formation & heat of reaction
- Be able to determine the following:
 - The specific heat of a metal (using a coffee cup calorimeter)
 - Delta h of a reaction
 - Acid/ base
 - Endothermic/ Exothermic
 - Specific heat of a liquid
 - Perform an experiment based on the heat exchange between water samples
 - Heat of fusion of ice
 - Heat of combustion of a candle
- Know these other topics for states:
 - Gibbs free energy
 - Entropy
 - Hess' law (calorimetry adding hydrate and non-hydrate)